

SOUTH AFRICA. PROGRESS REPORT ON CETACEAN RESEARCH, JANUARY 2002 TO DECEMBER 2002, WITH STATISTICAL DATA FOR THE CALENDAR YEAR 2002

Compiled by W.H. Oosthuizen

Branch: Marine and Coastal Management, Department of Environmental Affairs and Tourism, Private Bag X2, Roggebaai, 8012, South Africa

This report summarizes information obtained from: Mammal Research Institute Whale Unit, University of Pretoria; Natal Sharks Board (NSB) and University of Durban-Westville (UDW); Centre for Dolphin Studies (CDS); Department of Mathematics and Applied Mathematics, University of Cape Town (UCT); Port Elizabeth Museum (PEM); Branch Marine and Coastal Management, Department of Environmental Affairs and Tourism (DEAT) and Richards Bay Humpback Dolphin Project, Endangered Wildlife Trust (EWT).

1. Species and stocks studied

Common name	Scientific name	Area/stock(s)	Items referred to
Humpback Whale	<i>Megaptera novaeangliae</i>	Southeast and West coasts, Areas IV & V	2.1.1; 2.1.2; 3.1.1; 4.1; 4.3; 6.1; 9
Southern right whale	<i>Eubalaena australis</i>	South Africa	2.1.1; 3.1.1; 3.1.3; 4.3; 6.1; 9; 11
Bryde's whale	<i>Balaenoptera edeni</i>	South Africa	2.1.1; 4.3
Sei whale	<i>Balaenoptera borealis</i>	South Africa	11
Antarctic minke whale	<i>Balaenoptera bonaerensis</i>	Areas I, II, III, IV, V & VI	9
Blue whale	<i>Balaenoptera musculus intermedia</i>	Areas I, II, III, IV, V & VI	2.1.1; 4.1; 9; 11
Southern bottlenose whale	<i>Hyperoodon planifrons</i>	South Africa	4.3
Sperm whale	<i>Physeter macrocephalus</i>	South Africa	4.3; 9
Pygmy sperm whale	<i>Kogia breviceps</i>	South Africa	4.3
Longman's beaked whale	<i>Indopacetus pacificus</i>	South Africa	4.3; 11
True's beaked whale	<i>Mesoplodon mirus</i>	South Africa	4.3
Gray's beaked whale	<i>Mesoplodon grayi</i>	South Africa	4.3
Longfin pilot whale	<i>Globicephala melaena</i>	South Africa	4.3
Killer whale	<i>Orcinus orca</i>	South Africa	2.1.1; 2.1.2
False killer whale	<i>Pseudorca crassidens</i>	South Africa	2.1.1; 9
Indian Ocean bottlenose dolphin	<i>Tursiops aduncus</i>	South Africa	2.1.1; 2.1.2; 2.2; 3.1.1; 3.2; 4.2; 4.3; 4.4; 7.1; 9
Atlantic Ocean bottlenose dolphin	<i>Tursiops truncatus</i>	South Africa	4.3

Cont.

Indo-Pacific humpback dolphin	<i>Sousa chinensis</i>	Southeast and East coasts	2.1.1; 2.1.2; 2.2; 3.1.1; 3.2; 4.2; 4.3; 4.4; 5; 7.1; 9; 11.1
Long-beaked common dolphin	<i>Delphinus capensis</i>	South Africa	2.1.1; 2.1.2; 4.2; 4.3; 4.4; 5; 7.1
Pan-tropical spotted dolphin	<i>Stenella attenuata</i>	South Africa	4.3; 4.4
Common dolphin	<i>Delphinus spp.</i>	South Africa	2.1.1; 4.3
Spinner dolphin	<i>Stenella longirostris</i>	South Africa	2.1.1
Striped dolphin	<i>Stenella coeruleoalba</i>	South Africa	4.3
Heaviside's dolphin	<i>Cephalorhynchus heavisidii</i>	West coast	2.1.1; 4.3; 9; 11
Dusky dolphin	<i>Lagenorhynchus obscurus</i>	West coast	4.3; 11
Risso's dolphin	<i>Grampus griseus</i>	South Africa	4.3

2. Sightings data

2.1 Field work

2.1.1 Systematic

Natal Sharks Board (NSB)& University of Durban-Westville (UDW)

NSB undertook 7 long-shore aerial surveys along the coast of KwaZulu-Natal south from Durban to Port St. Johns, Eastern Cape, for investigations into Indian Ocean bottlenose and long-beaked common dolphin distribution and abundance patterns associated with the winter migrations of sardines (*Sardinops sagax*). They also undertook 9 long-shore aerial surveys along the coast of KwaZulu-Natal north of Durban to Kosi Bay (Mozambique border) recording cetacean sightings during a whale shark survey.

Centre for Dolphin Studies (CDS)

During 2002 there were three main research projects running at the CDS. Photo-identification of Indo-pacific humpback dolphins, Indian Ocean bottlenose dolphins and humpback whales were undertaken. Genetic analysis of humpback whales was also undertaken.

CDS research students undertook boat-based surveys in search of Indian Ocean bottlenose dolphins, Indo-pacific humpback dolphins and humpback whales. In total 57 research trips were launched from Plettenberg Bay. Species observed during these research trips included Indian Ocean bottlenose dolphins, Indo-pacific humpback dolphins, common dolphins, Heaviside's dolphins, pygmy killer whales, false killer whales, Bryde's whales, southern right whales and humpback whales.

The CDS was called to 6 cetacean strandings, numerous seal strandings and one stranding of a megamouth shark (*Megachasma pelagios*).

Endangered Wildlife Trust (EWT)

EWT scientists undertook boat-based surveys for Indo-Pacific humpback dolphins at Richards Bay in KwaZulu-Natal.

Department of Environmental Affairs and Tourism (DEAT)

Shore-based surveys were carried out from Cape Vidal over the period 4 July to 31 July 2002. A total of 359 sightings of at least 659 humpback whales were recorded from an observation tower during 189.81 hours of observation.

Ship-based surveys of humpback whales off the northern KwaZulu Natal coast were planned over the period 4 July to 23 July. These were severely compromised by both inclement weather conditions and failure of the vessel transmission. One hundred and twenty three sightings of 198 humpback whales, five sightings of 6 “like humpback whales”, three sightings of 48 Indian Ocean bottlenose dolphins, one sighting of 10 “like bottlenose dolphins”, two sightings of 30 spinner dolphins and four sightings of unidentified cetaceans were made. Sixty-one groups of 119 humpback whales were approached for photo-identification and biopsy studies, during which 68 biopsies were collected from 58 to 64 individual humpback whales, and 13 sloughed skin samples were collected from a possible seven (1 known 6 unknown) humpback whales. One hundred and eighty three digital images (of 72 individuals) were stored for photo-identification purposes (from 1736 images taken), while 16 other individuals were potentially photographed with film. Seven recordings of humpback whale song were made during 17 acoustic stations held during the survey.

Mammal Research Institute, Whale Unit MRIWU

Between 6 May and 31 December 2002, the MRIWU maintained a shore-based watch for migrating humpback and southern right whales from North Head, Saldanha Bay. In 1017.15 hours of watch, 152 sightings of 301 humpback whales, 402 sightings of 625 southern right whales, 14 sightings of 17 Bryde's/minke whales, 2 sightings of 25 killer whales and 145 sightings of 178 unidentified whales were made. Over the same period, the Unit's 6 m inflatable *Balaena* spent 83 sea-days off Saldanha Bay, in which a total of 51 groups of 90 humpback whales, 142 groups of 326 southern right whales, and 1 blue whale were intercepted for photo-identification, biopsy and confirmation of group size.

Between 7 and 15 October 2002, the MRIWU undertook a photo-identification survey for southern right whales along the south coast from Nature's Valley to Muizenberg, and up the west coast from Muizenberg to 32°S, using a chartered Jet Ranger helicopter. This was a continuation of the annual survey series started in 1979. In 29 hours 24 minutes of flying, 845 southern right whales and 2 Bryde's whales were encountered, and approximately 2 700 frames of southern right whales were exposed from an altitude of 100 m for individual identification purposes.

2.1.2 Opportunistic, platforms of opportunity

NSB & UDW

Sighting records are collected from the NSB net meshing boats (see Cockcroft, V.G., Ross, G.J.B. and V.M. Peddemors. 1990b. Bottlenose dolphin *Tursiops truncatus* distribution in Natal's coastal waters. *S. Afr. J. mar. Sci.*, 9:1-10). Sighting records are also collected from the Natal Sharks Board tourist boat.

CDS

CDS research is sponsored by the commercial whale and dolphin watching company, Ocean Safaris. Photographs of killer whales have been taken aboard Ocean Safaris commercial vessels.

EWT

EWT scientists undertook boat-based surveys for Indo-pacific humpback dolphins at Richards Bay in KwaZulu-Natal.

DEAT

One hundred and ninety eight images collected by whale watch operators of tail flukes from 103 individual humpback whales have been scanned and placed in a central database held by DEAT.

2.2 Analyses/development of techniques

NSB & UDW

Aerial surveys are being used to estimate abundance and distribution of cetaceans in association with the movement of sardines into KwaZulu-Natal during the austral winter months. The time-area closure of the shark net fishery relies on these data. Future cetacean and prey data will be examined through GIS technology using satellite images of SST & chlorophyll a (phytoplankton), plus oceanographic data collected *in situ*. Aerial surveys for whale sharks are being used to collect data suitable to estimate abundance and seasonal changes in nearshore distribution of cetaceans in the previously under-researched northern KwaZulu-Natal region.

EWT

Photo-ID studies of Indian Ocean bottlenose dolphins and Indo-pacific humpback dolphins in the Durban and Richards Bay regions, respectively, are being used to establish population size and dynamics, with particular reference to determining impact of bycatch in shark nets.

3. Marking data

3.1 Field work

3.1.1 Natural marking data

Species	Feature	Area/ stock	Number photograph ed	Catalogued (Y/N)	Cat. Total	Contact person / institute
Humpback whale	Left Dorsal Fin	C1	?	Y	69	DEAT
Humpback whale	Right Dorsal Fin	C1	?	Y	58	DEAT
Humpback whale	Tail Fluke	C1	?	Y	133	DEAT
Southern right whale	Callosity pattern	South Africa, S & W coast (aerial)	194 cow-calf pairs	N	690 cows	MRI Whale Unit
Southern right whale	Callosity pattern	South Africa, W coast (boat)	1 400*	N	775	MRI Whale Unit

Cont.

Indo-pacific humpback dolphin	Dorsal Fin	South Africa	1630	?	?	CDS
Humpback Whale	Dorsal Fin & Fluke	South Africa	443	?	?	CDS
Indo-pacific humpback dolphin	Dorsal fin and hump	Richards Bay	42	Y	109	EWT

- Number of frames exposed

3.1.2 Artificial marking data

None

3.1.3 Telemetry data

Species	Tag type	No. successfully deployed	Maximum time transmitting	Contact person/institute
Southern right whale	Satellite	21	4 - 5 months	Oregon State University/ MRI Whale Unit

3.2 Analyses/development of techniques

NSB & UDW

Photo-ID studies of Indian Ocean bottlenose dolphins and Indo-pacific humpback dolphins in the Durban and Richards Bay regions, respectively, are being used to establish population size and dynamics, with particular reference to determining impact of bycatch in shark nets.

4. Tissue/biological samples collected

4.1 Biopsy samples

Species	Area/Stock	Number collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Humpback Whale	West coast	1	?	?	?	CDS
Humpback whale	C1	65-71	Y	?	81 samples	DEAT
Humpback whale	West coast	64	Y	?	131	MRI Whale Unit/AMNH
Blue whale	West coast	1	Y	0	1	MRI Whale Unit

4.2 Samples from directed catches or bycatches

Species	Area/stock	Calendar year / Season Total	Archived	Tissue types	Contact person
Indian Ocean bottlenose dolphin	KwaZulu-Natal	25	Y	S, B, G, T, ST	Peddemors (UDW & NSB)
Indo-pacific humpback dolphin	KwaZulu-Natal	6	Y	S, B, G, T, ST, K	Peddemors (UDW & NSB)
Long-beaked common dolphin	KwaZulu-Natal	29	Y	S, B, G, T, ST	Peddemors (UDW & NSB)

S=skin, B=blubber, T=teeth, W=baleen, G=gonads, C=ext parasites, P=internal parasites, K=skeletal remains, A=pathology samples, CV=cardiovascular systems, ST=Stomach

4.3 Samples from stranded animals (this information should be treated as preliminary and unconfirmed)

Species	Area/stock	No	Archived	Tissue type	Contact person/inst.
Humpback whale	West coast	1	?	S,B,C	CDS
Humpback whale	West coast	1	Y	S, ,C	MRI Whale Unit
Humpback whale	South coast	1	N		MRI Whale Unit
Humpback whale	South coast	1	N		MRI Whale Unit
Humpback whale	South coast	1	N		MRI Whale Unit
Humpback whale	East coast	1	N		PEM
Humpback Whale	West Coast	1	N	S,B,C	DEAT & MRI Whale Unit
Southern right whale	South coast	1	Y	S,B,G,W	MRI Whale Unit
Southern right whale	South coast	1	N		MRI Whale Unit
Southern right whale	South coast	1	N		MRI Whale Unit
Southern right whale	South coast	1	N		MRI Whale Unit
Southern right whale	South coast	1	Y	G,C	MRI Whale Unit
Southern right whale	South coast	1	N		MRI Whale Unit
Southern right whale	West coast	1	N		MRI Whale Unit
Southern right whale	South coast	1	Y	W,C	MRI Whale Unit
Southern right whale	South coast	1	N		MRI Whale Unit
True's Beaked Whale	Eastern Cape	1	?	K	CDS
Longman's Beaked Whale	Eastern Cape	1	?	S,B,P,K	CDS
Sperm whale	West coast	1	N		MRI Whale Unit
Sperm whale	East coast	1	Y	T	PEM
Sperm whale	West Coast	1	N	S, B, T	DEAT
Bryde's Whale	West Coast	1	N	S,W.	DEAT & MRI Whale Unit
Bryde's whale	East coast	2	N		PEM
Bryde's whale	South coast	1	Y	S	MRI Whale Unit
Bryde's whale	West coast	1	Y	B	MRI Whale Unit
Long-finned pilot whale	West coast	1	Y	K	MRI Whale Unit

Cont.

Long finned pilot whale	West Coast	1	N	S,K	DEAT
Gray's beaked whale	West coast	1	Y	S,B,K,G,P,ST	MRI Whale Unit
Southern bottlenose whale	West Coast	1	N	S,T,G,K	DEAT
Pygmy sperm whale	East coast	1	Y	T,K,G,ST	PEM
Indian Ocean bottlenose dolphin	KwaZulu-Natal	1	Y	S, B, G, T, ST	Peddemors (UDW)
Indian Ocean bottlenose dolphin	Eastern Cape	1	?	Entire animal	CDS
Indian Ocean bottlenose dolphin	East coast	6	Y	T	PEM
Atlantic bottlenose dolphin	West coast	1	Y	S,B,T,G,P,K,ST	MRI Whale Unit
Atlantic bottlenose dolphin	West coast	1	Y	T,G,P,K,ST	MRI Whale Unit
Long-beaked common dolphin	KwaZulu-Natal	5	Y	S, B, G, T, ST	Peddemors (UDW)
Common dolphin	East coast	2	N		PEM
Common dolphin	West Coast	2	N	S,B,G,T,P,A,ST,K.	DEAT
Pan-tropical spotted dolphin	KwaZulu-Natal	1	Y	S, B, G, T, ST, K	Peddemors (UDW)
Striped dolphin	Eastern Cape	1	?	K	CDS
Heaviside's dolphin	West coast	1	Y		MRI Whale Unit
Dusky dolphin	West coast	1	Y	T	MRI Whale Unit
Dusky dolphin	West Coast	1	N		DEAT
Indo-pacific humpback dolphin	East coast	1	Y	T,G,K,ST	PEM
Risso's dolphin	East coast	1	Y	T,K, ST	PEM

S=skin, B=blubber, T=teeth, W=baleen, G=gonads, C=ext parasites, P=internal parasites, K=skeletal remains, A=pathology samples, CV=cardiovascular systems, ST= stomach

4.4 Analyses/development of techniques

NSB & UDW

Skin samples of Indian Ocean bottlenose dolphins are being analysed for genetic studies at the University of Durham, U.K., by Dr. R. Hoelzel and A. Natoli.

Skin samples of Indo-pacific humpback dolphins are being analysed as part of a worldwide genetic analysis of Sousa at the American Museum of Natural History, U.S.A., by Dr. H. Rosenbaum.

Biological samples for all species have been accessioned into the marine mammal collection of the Port Elizabeth Museum.

5. Pollution Studies

UDW

Samples of blubber from all bycatch and stranded animals are stored at the UDW for pollution studies.

A study analysing long-beaked common dolphin samples has been initiated as a post-doc study by Dr. D. Wagner (UDW).

Continued on next page...

6. Statistics for large cetaceans

6.1 For the calendar year 2002

Species	Area/stock	Directed catch		Incidental catch			Source*
		Reported	Est. total	Reported	Est. total	Released alive	
Humpback whale	KwaZulu-Natal	0		3	3	3	Shark nets
Southern right whale	KwaZulu-Natal	0		1	1	1	Shark nets
Suspected whale* (unknown species)	KwaZulu-Natal	0		39	39	39	Shark nets

* These data are for holes found in the shark nets that are attributed to possible whale damage.

6.2 Other non-natural mortality for the calendar year 2002

7. Statistics for small cetaceans

7.1 For the calendar year 2002

Species	Area/stock	Directed catch		Incidental mortality			Live-capture
		Reported	Est. total	Reported	Est. total	Source*	Reported
Indian Ocean bottlenose dolphin	KwaZulu-Natal	0		35	35	Shark nets	
Indo-Pacific humpback dolphin	KwaZulu-Natal	0		9	9	Shark nets	
Long-beaked common dolphin	KwaZulu-Natal	0		32	32	Shark nets	
Unknown dolphin species	KwaZulu-Natal	0		2	2	Shark nets	

8. Strandings

The MRI Whale Unit, c/o South African Museum, Box 61, Cape Town, and the Department of Environmental Affairs and Tourism, P. Bag X2, Cape Town, attend strandings in the Western and Northern Cape; the Port Elizabeth Museum and Centre for Dolphin Studies attend strandings in the Eastern Cape; and the Natal Sharks Board, P. Bag 2, Umhlanga Rocks, 4320, the University of Durban-Westville, P. Bag X54001, Durban and the Durban Sea World, P.O. Box 10712, Marine Parade, attend strandings in KwaZulu-Natal.

9. Other studies and analyses

NSB & UDW

The NSB is experimenting with active acoustic devices (pingers), ellipsoidal air-filled floats (sonar reflectors), time-area closure of the fishery and drum-lines (baited hooks) as bycatch mitigation measures to reduce cetacean captures. Attempts have been made to obtain whale alarms to reduce large cetacean entanglements in the shark nets.

An anatomical study of dolphin dorsal fins is being conducted with Prof. T. Lingham-Soliar, UDW.

MRIWU

Identification of individual southern right whales *Eubalaena australis* using vocal characteristics - Ph D dissertation, Leonie Hofmeyr-Juritz

Migratory characteristics of humpback (*Megaptera novaeangliae*) and southern right whales (*Eubalaena australis*) on the west coast of South Africa - Ph D dissertation, Jaco Barendse

Distribution, movements and dispersal rates of Heaviside's dolphin *Cephalorhynchus heavisidii* – Ph D dissertation, Simon Elwen

Age and reproduction in the false killer whale *Pseudorca crassidens* – M Sc dissertation, Ines Ferreira

Department of Mathematics and Applied Mathematics, University of Cape Town

Investigating possible sources of bias in Antarctic minke whale estimates from IDCR-SOWER surveys - Brandao, Butterworth, Mori, Rademeyer.

Estimating the Southern Hemisphere blue whale population increase rate - Brandao, Butterworth, Mori, Rademeyer.

Multi-species modelling approaches, in particular for application to interactions between major predators and krill in the Antarctic ecosystem - Mori, Butterworth, Plaganyi.

Estimating Southern Hemisphere humpback whale population dynamics - Johnston, Butterworth.

Evaluating trends in Southern Hemisphere sperm whale conception dates - Brandao, Butterworth [with P. Best].

Contributing to the process of developing and running Implementation Simulation Trials for the RMP and AWMP - Butterworth, Johnston.

10. Literature cited

Cockcroft, V.G., Ross, G.J.B. and V.M. Peddemors.1990b. Bottlenose dolphin *Tursiops truncatus* distribution in Natal's coastal waters. *S. Afr. J. mar. Sci.* **9**:1-10

11. Publications

11.1 Published or 'In press' papers only

Best, P.B., and Lockyer, C.H. 2002. Reproduction, growth and migrations of sei whales *Balaenoptera borealis* off the west coast of South Africa in the 1960s. *S. Afr. J. mar. Sci.* 24: 111-133.

Best, P.B., Rademeyer, R.A., Burton, C., Ljungblad, D., Sekiguchi, K., Shimada, H., Thiele, D., Reeb, D., and Butterworth, D.S. In press. Blue whales on the Madagascar Plateau, December 1996. *J. Cetacean Res. Mgmt.*

Cassens, I., Van Waerebeek, K., Best, P.B., Crespo, E.A., Reyes, J., and Milinkovitch, M.C. In press. Not sampled but influent: missing haplotypes and the phylogeography of dusky dolphins (*Lagenorhynchus obscurus*). *Molecular Ecology*.

Dalebout, M.L., Baker, C.S., Ross, G.J.B., Anderson, R.C., Best, P.B., Cockcroft, V.G., Hinsz, H.L., Peddemors, V. and Pitman, R.L. in press. New specimens of Longman's beaked whale *Indopacetus pacificus* (Cetacea: Ziphiidae). *Marine Mammal Science*.

Dalebout, M.L., Ross, G.J.B., Baker, C.S., Anderson, R.C., Best, P.B., Cockcroft, V.G., Hinsz, H.L., Peddemors, V., and Pitman, R.L. In press. Appearance, distribution and genetic distinctiveness of Longman's beaked whale, *Indopacetus pacificus*. *Mar. Mammal Sci.*

Jansen van Vuuren, B., Best, P.B., Roux, J.-P. and Robinson, T.J. 2002. Phylogeographic population structure in the Heaviside's dolphin (*Cephalorhynchus heavisidii*): conservation implications. *Animal Conservation* 5: 303-307.

Keith, M., Peddemors, V.M. and Bester, M. 2002. Population characteristics of Indo-Pacific humpback dolphins at Richards Bay, South Africa: implications for incidental capture in shark nets. *South African Journal of Wildlife Research* 32(2): 153-162.

Patenaude, N.J., Portway, V.A., Schaeff, C.M., Bannister, J.L., Best, P.B., Payne, R.S., Rowntree, C.V.J., Rivaola, M., and Baker, C.S. In press. Genetic differentiation and population structure among southern right whales (*Eubalaena australis*). *J. Heredity*.